

# Forest fertilization impact on soil and soil water quality

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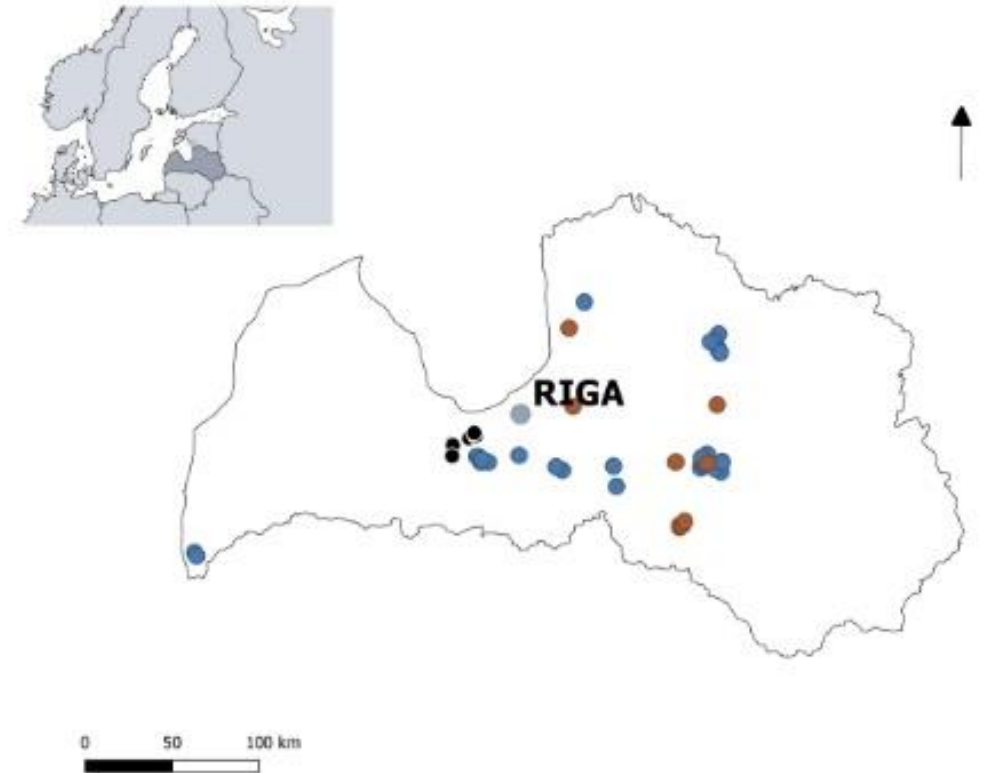
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5 Oct, 2021

# Study area



- 63 research objects (Fig. 1.)
- Tree species of stands: Norway spruce, Scots pine and birch
- Fertilizers: wood ash (WA), ammonium nitrate (N), combined fertilizer (WAN)
- Soil and moisture conditions: dry mineral soil, wet mineral soil, drained mineral soil and drained organic soil



**Figure 1.** Location of the demonstration objects. Dots identifies different treatments: brown – wood ash; blue – ammonium nitrate, black – combined.

# Soil carbon stock I

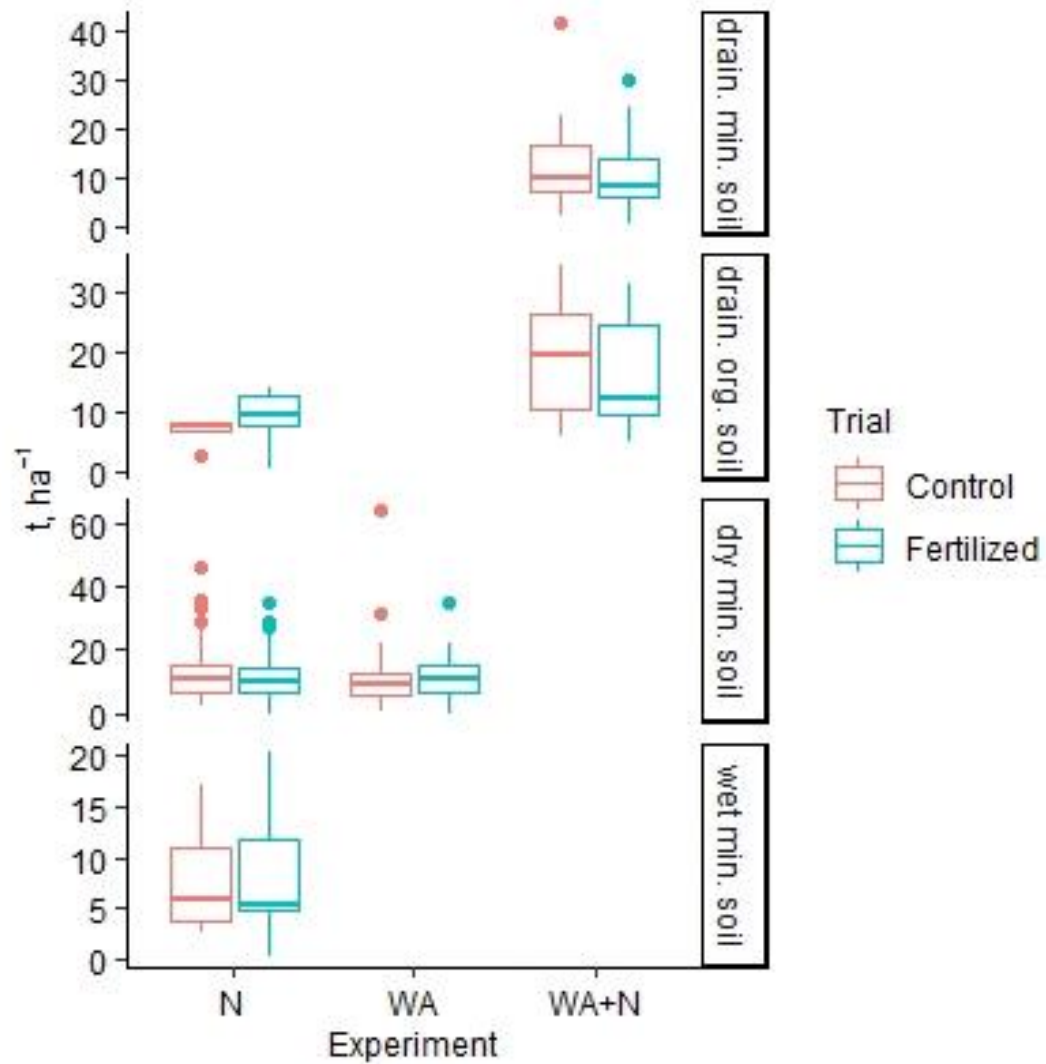


Figure 2. The average  $C_{ORG}$  stock in O horizon.

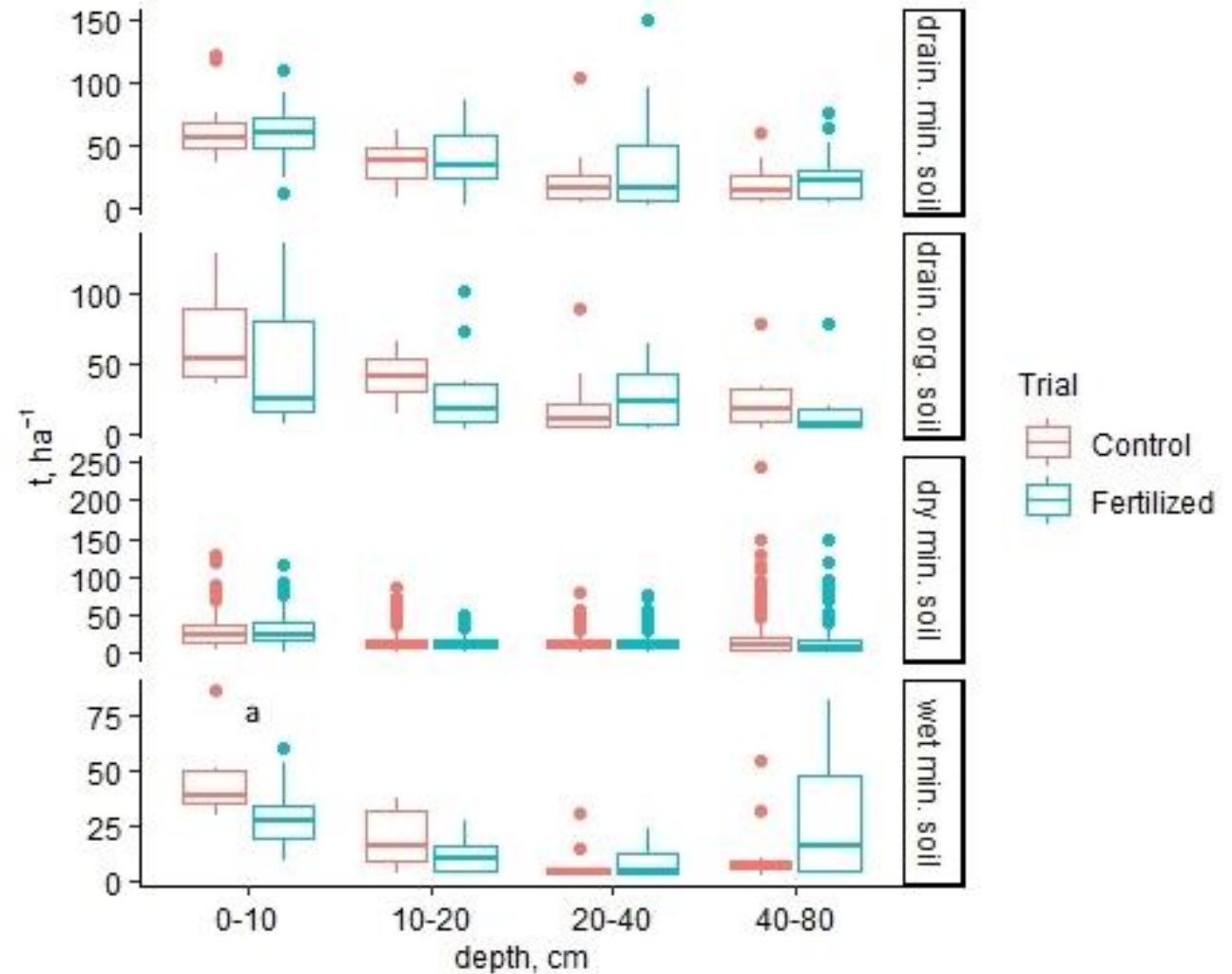
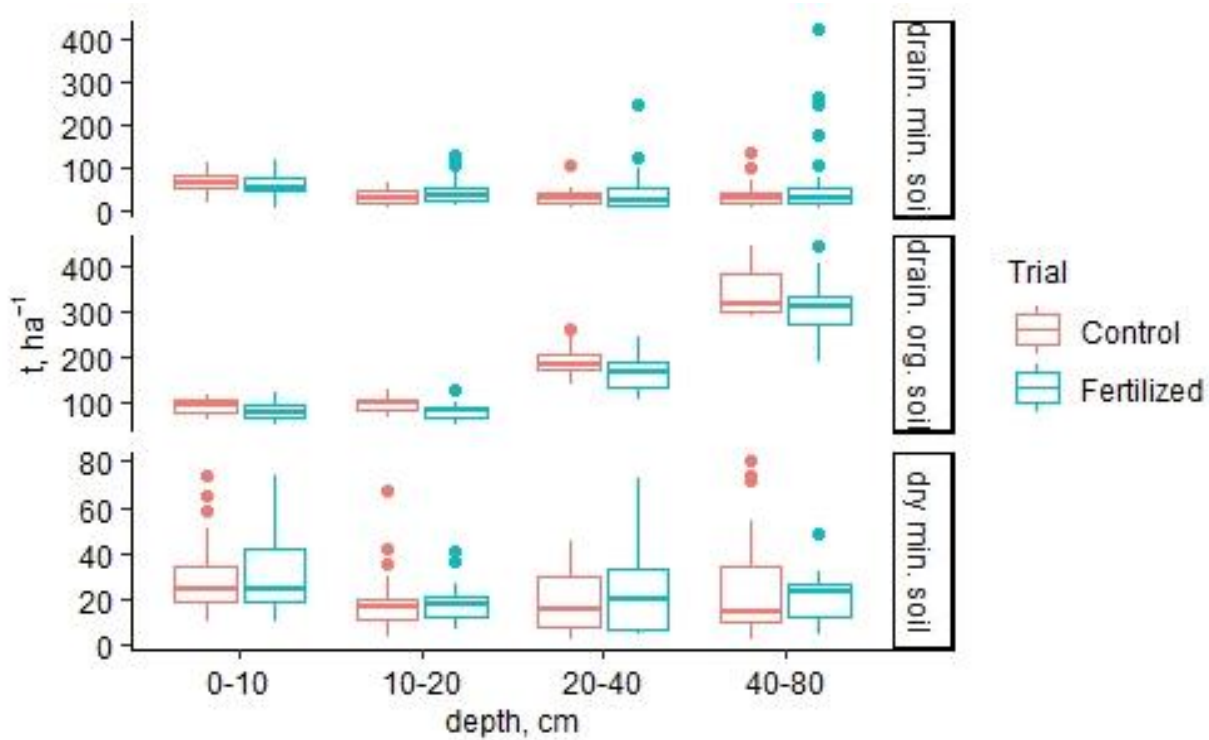
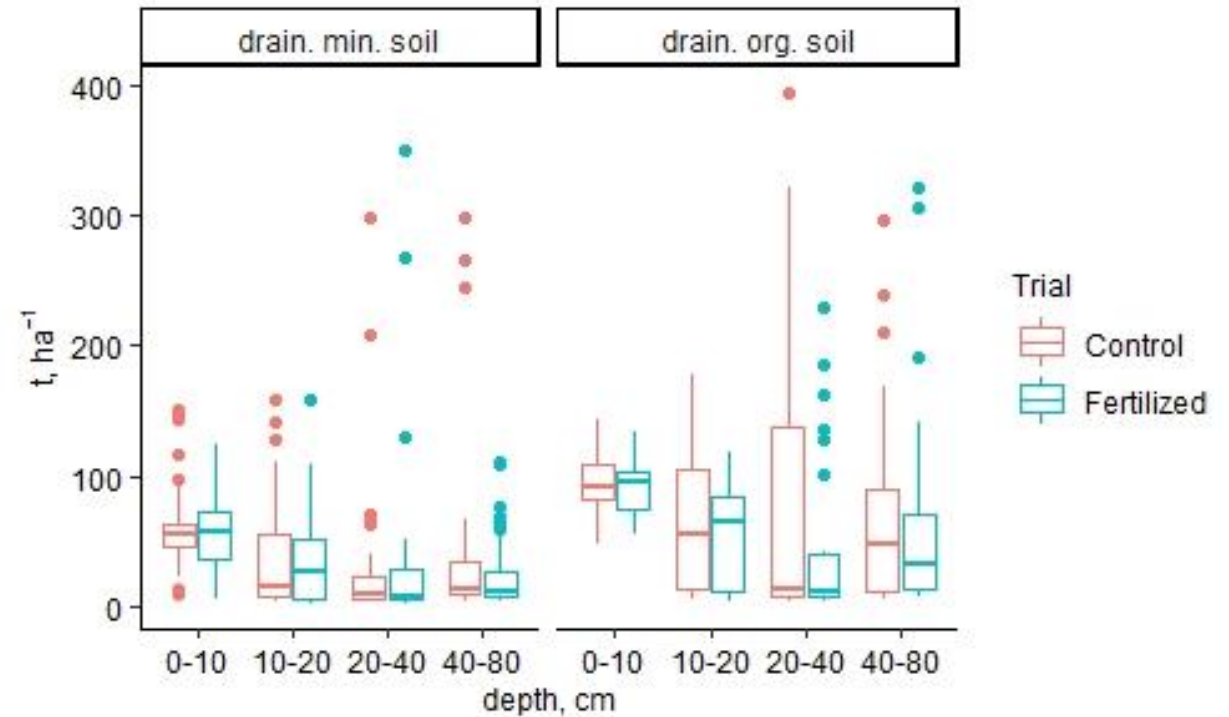


Figure 3. The average  $C_{ORG}$  stock in soil horizons at N experiment objects (a:  $p < 0.05$ ).

# Soil carbon stock II

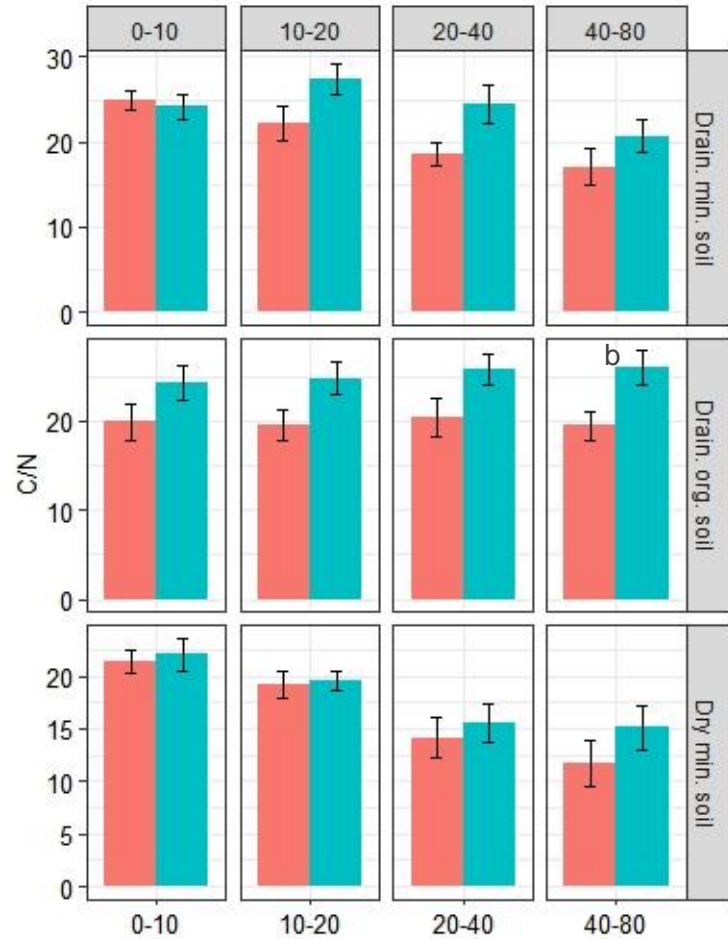


**Figure 4.** The average  $C_{ORG}$  stock in soil horizons at WA experiment objects.

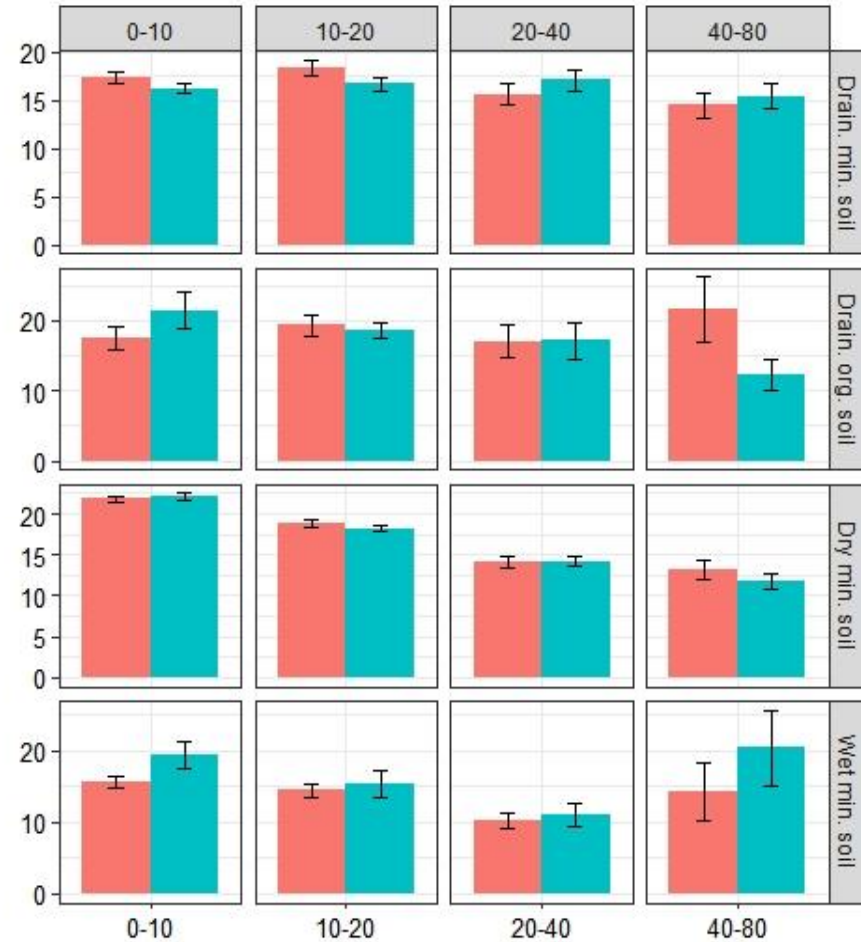


**Figure 5.** The average  $C_{ORG}$  stock in soil horizons at WAN experiment objects.

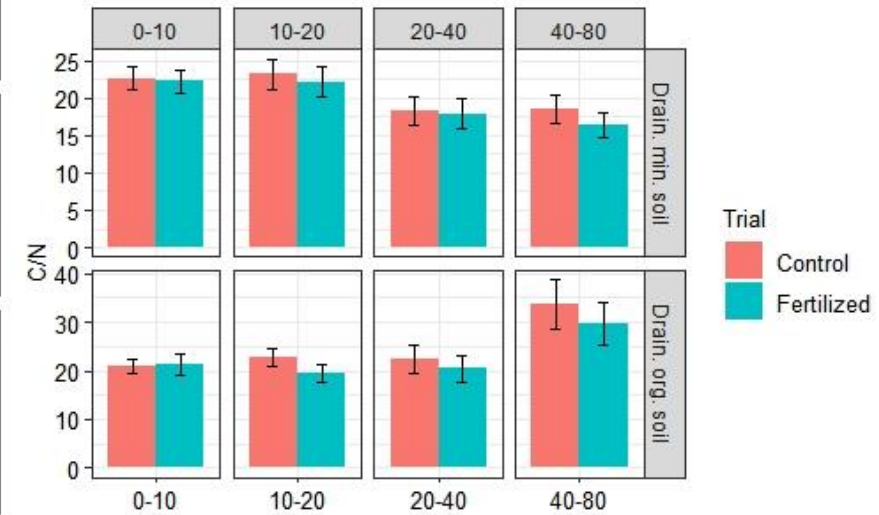
# C/N ratio



**Figure 6.** The average C/N ratio in soil horizons at WA experiment objects (b:  $p < 0.05$ ).



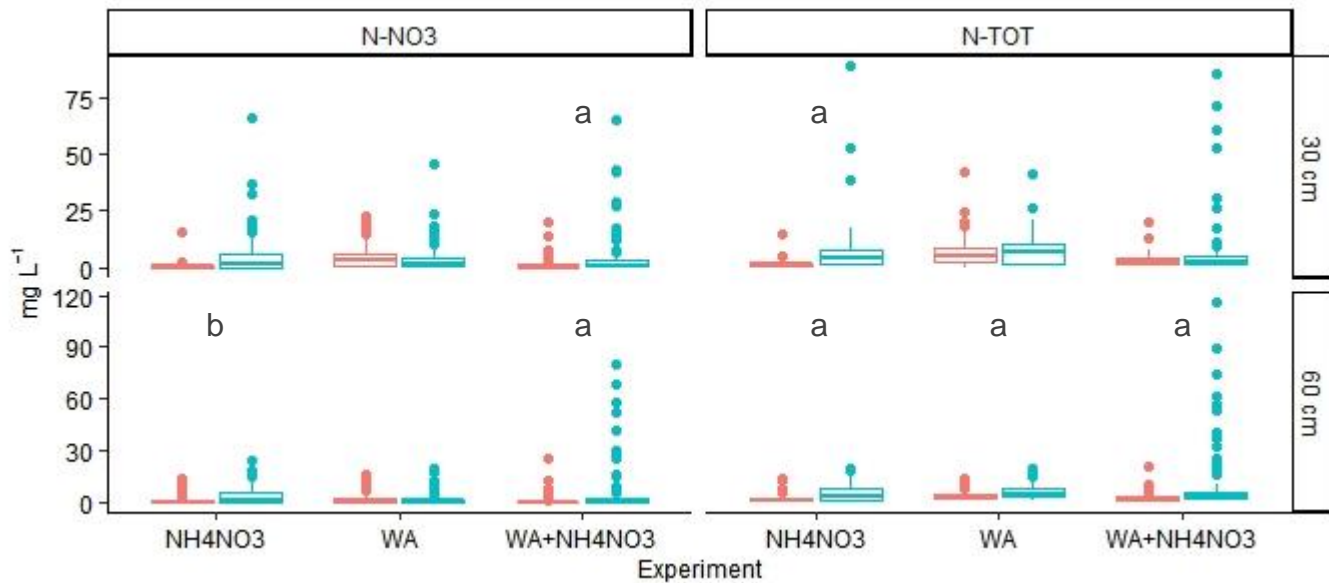
**Figure 7.** The average C/N ratio in soil horizons at N experiment objects.



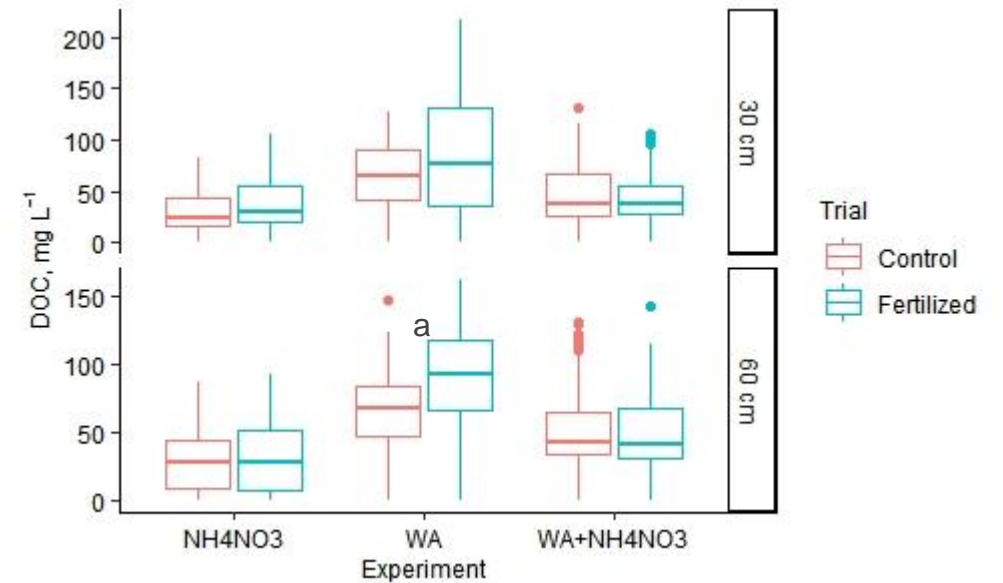
**Figure 8.** The average C/N ratio in soil horizons at WAN experiment objects.



# Soil water



**Figure 9.** The average concentration of  $N_{TOT}$  and  $NO_3^-$  in soil water (a:  $p < 0.01$ ; b:  $p < 0.05$ ).



**Figure 10.** The average concentration of DOC in soil water (a:  $p < 0.01$ ).

***Thank you for your attention!***

LZP KP 2020/2-0237 "Evaluation carbon input with above- and below-ground litter in forests on drained and naturally wet organic soils"